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TRANSLATIONS ON ENVIRONMENTAL QUALITY

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CONTENTS

PAGE

ASIA

AUSTRALIA

Danger Sign for Public Health (Catherine Martin; THE WEST AUSTRALIAN, 6 Jun 78)	1
Inquiry Into Herbicide 2, 4, 5-T Possible Birth Defects Connection (THE AGE, 6 Jun 78)	3
State Recommends Temporary Ban on 2, 4, 5-T Herbicide (Russell Skelton, et al; THE AGE, 8 Jun 78)	5

CANADA

Eels in Quebec Said To Be Contaminated (Gilles Provost; DE DEVOIR, 1 Jun 78)	8
Pulmonary Anomalies Found in Quebec Asbestos Workers (Jean-Claude Picard; LE DEVOIR, 9 Jun 78)	11
Quebec Accused of Neglecting Environment (Gilles Provost; LE DEVOIR, 17 May 78)	13
Conservation of Water Urged in Quebec (LE DEVOIR, 17 May 78)	16

EASTERN EUROPE

Failure to Complete Pollution Control Projects Noted (GLOS PRACY, 16 Jun 78)	18
---	----

CONTENTS (Continued)

Page

SUB-SAHARAN AFRICA

CAPE VERDE

- Tree Planting Campaign
(VOZ DI POVO, 4 Feb 78) 21

ZAIRE

- Fish Poisoned From Chemicals
(Mokende Makbondo Maya Bila; ZAIRES, 15 May 78) 22

WESTERN EUROPE

INTERNATIONAL AFFAIRS

- Chemical Pollutants in North Sea Examined
(Lore Asmus; FRANKFURTER RUNDSCHAU, 3 Jun 78) 24

- Baltic Pollution Threatens Seal Survival as Embryos Die
(HELSINGIN SANOMAT, 23 May 78) 26

PORTUGAL

- Creation of Atlantic-Iberian-African Unpolluted Zone Discussed
(DIARIO DE NOTICIAS, 6 Jun 78) 28

- Journalist Concerned Over Pollution of Tagus Estuary
(Antonio Amorim; DIARIO DE NOTICIAS, 8 Jun 78) 31

- Article Raises Questions of Pollution From Spanish Reactors
(EXPRESSO, 17 Jun 78) 38

DANGER SIGN FOR PUBLIC HEALTH

Perth THE WEST AUSTRALIAN in English 6 Jun 78 p 3

[Article by Catherine Martin]

[Text]

ROTTNEST, our island paradise for back-to-nature holiday-makers and tourists, is an eco-system in miniature.

The troubles plaguing it now—the salmonella, degeneration of wildlife and deterioration of native flora—point to what will happen on a wider scale on the mainland if man does not stop polluting his own nest.

Two scientists involved in the salmonella study, John Iveson and Don Bradshaw, say that Rottnest is a unique miniature ecology, and a biological indicator of the changes that have happened to the environment and wildlife through the interference of man.

Because Rottnest was a small island eco-system under intense pressure from the 300,000 people visiting it every year, the disturbance of the environment had escalated change so that the full impact could be clearly seen.

"The problem is much broader than Rottnest alone," said Professor Bradshaw, head of the WA University department of zoology.

"You can't solve the Rottnest problem without solving the much broader problem of the management of natural environments including the wetlands in the metropolitan area.

"We tend to think of swamps as ugly and untidy—we don't see them as a natural and desirable part of the environment. So we put rubbish tips on them, fill them in, and turn them into football ovals."

The rubbish enriched the waters, making them a magnificent habitat for salmonella.

Infection

"The gulls scavenge on the tips, become infected and transfer the infection elsewhere," he said.

"Almost every lake around the metropolitan area now has salmonella living in it.

"If you see a swamp as undesirable, something to be filled in with rubbish and turned into an oval, you are, in the long run, going to end up with some sort of environmental health problem.

"Wetlands in the metropolitan area have been filled in, and this has stimulated the growth of salmonella and the risk of infection from it."

Mr Iveson, an authority on salmonella, and senior medical technologist in the State Health Laboratories, said: "We have lost 75 per cent of the wetlands in the WA coastal area — buried them under rubbish and concrete, or made them into parks and ovals.

"We say we can't have a health hazard, but wetlands are a natural environment, and not a health hazard at all."

AUSTRALIA

INQUIRY INTO HERBICIDE 2, 4, 5-T POSSIBLE BIRTH DEFECTS CONNECTION

Melbourne THE AGE in English 6 Jun 78 p 3

[Text] The Queensland Health Minister, Dr Edwards, today is expected to recommend restrictions on the controversial herbicide 2, 4, 5-T, now under investigation in Victoria.

This follows his announcement that the Health Department will investigate a high rate of birth defects at Cairns--an area sprayed heavily with the herbicide.

Dr Edwards said he was becoming concerned at reports suggesting a link between human birth defects and 2, 4, 5-T.

In Victoria, a Government-appointed specialist committee is still investigating birth defects and the use of 24-D and 2, 4, 5-T in the Yarram area of South Gippsland.

The Victorian Health Minister, Mr Houghton said last night he expected the committee's report soon.

Dr Edwards said last night he was not satisfied with a report by the National Health and Medical Research Council on the possible link.

"The council said it was safe provided it was used in the recommended quantities and dosage," he said.

"I can't accept that.

"We have no guarantees that aerial sprayers will observe those quantities.

"If they want a bigger kill-off there's no doubt they could increase it."

Dr Edwards said the Queensland Government had referred the question back to the council.

AUSTRALIA

STATE RECOMMENDS TEMPORARY BAN ON 2, 4, 5,-T HERBICIDE

Melbourne THE AGE in English 8 Jun 78 p 1

[Article by Russell Skelton, Philip McIntosh and Gregg Borschmann]

[Text] The State Health Minister, Mr Houghton, yesterday recommended a temporary State-wide ban on the use of the controversial herbicides 2, 4-D and 2, 4, 5-T.

Mr Houghton said the herbicides should not be used until it had been established that there was no link between the herbicides and human birth defects.

He said use of the herbicides would be suspended in all State Government departments pending the results of State and Federal investigations.

Scientist's Warning: Thalidomide Similarity

"We are on the verge of another thalidomide, I don't say that lightly."

These were the words last night of a leading Australian research scientist, Dr John Evans.

Dr Evans, of Brighton, has gathered information on 13 overseas studies and other literature on the effects of 2, 4, 5-T and its active ingredient, dioxin, on laboratory animals.

Dr Evans, a former biological organic chemist with the CSIRO, concluded from his review that dioxin was so dangerous its prescribed limit for use in Australia--0.1 parts per million--was totally unsafe.

He said the research suggested the limit should be 0.001 ppm.

In all 13 overseas studies, the chemicals produced teratogenic effects (birth defects) in laboratory animals, Dr Evans said.

Among the studies were:

The report pointed out that the area had been sprayed heavily with 2, 4-D and 2, 4, 5-T.

That afternoon the State Government ordered a full investigation by a 12-man committee, which is expected to report to Mr Houghton within four weeks.

Yesterday's move by the Government marks a sharp reversal in its approach.

Previously Mr Houghton had rejected Opposition calls to ban 2, 4-D and 2, 4, 5-T on the grounds there were no scientifically proven link between the herbicides and congenital abnormalities.

Only three days ago, Mr Houghton told THE AGE he did not share the misgivings of the Queensland Health Minister, Dr Edwards, about 2, 4, 5-T.

Confident

"I'm fairly confident that control in Victoria is good," he had said.

But Mr Houghton said yesterday he was deeply concerned over the issue and decided to change his attitude following discussions with health officials.

He said he still believed there was no scientific evidence yet to prove that the chemicals cause birth defects.

In Sydney the eminent gynaecologist Dr William McBride said he would begin tests next week which he hopes may clear up some of the controversy surrounding 2, 4, 5-T.

The only company in Australia manufacturing 2, 4, 5-T, Chemical Industries (Kwinana) Pty. Ltd of Western Australia, refused to comment last night on the ban.

The president of the Victorian Farmers' Union, Mr Jim Heffernan, said last night he did not believe farmers should stop using the chemicals and suffer economic loss because of "some remote possibility."

CSO: 5000

EELS IN QUEBEC SAID TO BE CONTAMINATED

Montreal DE DEVOIR in French 1 Jun 78 p 21

[Article by Gilles Provost]

[Text] Throughout Quebec sports fishermen should abstain from eating the eels they catch even if their meat is tasty because this genus of fish always contains an excessive amount of polychlorinated biphenyls (PCB). These purely synthetic chemicals, with which the public is too unfamiliar, are toxic, carcinogenic, virtually indestructible and accumulate in fats and in the nervous system.

A recent analysis of the meager facts currently known about the extent of this toxic chemical in the environment of Quebec by Canada Environment also revealed that several other species of such are just as hazardous to eat in some regions because of an excess of PCB. The most seriously contaminated region in this regard is precisely that of Montreal, where many fish are contaminated simultaneously by an excess of mercury and an excess of PCB.

On the basis of what is now known, the Canadian government is prohibiting the sale of any food containing more than two parts per million (ppm) of PCB. Actually, the fat of the average resident of Quebec already contains half this concentration. In addition, an analysis of 500 eels caught in the primary Quebec water basins since 1972 reveals a mean contamination of 8.5 ppm. In eels, the highest levels reach 30 ppm, 15 times the tolerated maximum.

At a time when governments are beginning to think that toxic chemicals constitute the most serious form of pollution to which we are exposed, the authors of this analysis indicate that no information is available concerning the PCB concentration in the air or soil of Quebec. However, these chemicals seem to spread as a result of atmospheric phenomena and it is proven that corn plants can absorb PCB if they grow in contaminated ground.

Indeed, this toxic chemical accumulates particularly in fats and the rare analyses conducted on this subject indicate that the fat of the wall-eyed pikes of the St Lawrence, for example, contains an average of about 50 ppm of PCB and the contamination level can exceed 100 ppm in the fat of some specimens.

9179

CSO: 5000

Nevertheless, it was proven after further verification that 161 workers, or a very small part of the total sample analyzed, was suffering from this disease which has caused so much ink to flow during the last few years.

These data clearly contradict a shock report, produced in 1975 by the team of Dr Silikov, of Mount Sinai, which disclosed that 65 percent of the asbestos workers were suffering from asbestiosis.

It will be recalled that this report, which had been commissioned by the CSN [National Safety Commission], was at the heart of the long strike which hit this industry during 1975.

When asked about reasons which might explain the gulf which separates the two reports, Dr Gogoux explained that Dr Silikov's study lasted only 5 days, compared with more than a year for his, and that it only involved workers with more than 20 years exposure to the fiber, in fact those who were retired or had already been diagnosed as having asbestiosis.

Dr Gogoux further explained that his committee's evaluation was limited to three pulmonary signs which were judged to be pertinent in evaluating the presence of this disease, that is to say a dry wheeze, shortness of breath and nail deformities characteristic of chronic illnesses, thus eliminating other signs, such as coughs and chest pains.

On the other hand, Mr Johnson, who is a doctor himself, did not question the results of this study, which was carried out by the CAT following a request from the Bourassa government, but he was anxious to limit its scope.

"This study," he said, "merely observed a given situation at a given moment. It does not answer the question as to what the effects of prolonged exposure to the asbestos fiber are on the workers."

Moreover, added the minister, the study does not provide any answer to various questions such as the acceptable level of exposure to asbestos, the relationship between tobacco and asbestiosis, between asbestos and cancer, etc.

Therefore, said Mr Johnson, who was accompanied on the occasion by his colleague from natural resources, Mr Yves Bérubé, the government has no intention at all to reduce its efforts in fighting this disease and improving its standards for the protection of the health of its workers.

Some of these standards -- such as those setting the acceptable level of asbestos dust in the mines and the mills at two fibers per cubic centimeter of air -- are included in Act 52, while others will become known at the time of the still awaited presentation of the white paper on the health and safety of the workers, which is currently being prepared by the minister of state, Mr Pierre Marois.

he is still in the "minor leagues" compared to the other members of the cabinet.

Mr Desjardins also denounced the understanding between the Services of Protection of the Environment and the Ministry of Municipal Affairs, an agreement that allows Municipal Affairs to have jurisdiction over drinking water and sewers while SPE [Services of Protection of the Environment] will control only the larger water intakes and the final purification of the waters. "How will Environment be able to ensure a suitable degree of purification if the water mains are so bad that the effluents are excessively diluted and if it has no power to check on whether installations are up to the minimal norms of effectiveness?"

While blaming the SPE for never having exercised their power to check on the quality of municipal installations, Mr Desjardins maintains that the only solution is to take away that power. "If Municipal Affairs had used their jurisdiction on the urban zoning level," he also remarked, "the Ministry would not have been put in a position of inferiority in regard to SPE. SPE found themselves defining zoning while checking a private system of water mains and sewers."

In order to expose the present tilt in favor of economic expansion at any price and in favor of cost reduction, Mr Desjardins called for the appointment of a real Ministry of the Environment which would have a budget and a "minimum" of personnel.

In his opinion, it is only playing with words to affirm that the Services of Protection of the Environment have experienced one of the largest increases in personnel in two years. "If there are only 3 employees in a ministry, it will be enough to add one in order to have a "fantastic 30 percent expansion," he charged.

Even if on the day before he had denounced "the delirium of engineering firms that construct regular chrome systems for the needs of the year 2050," Mr Desjardins also emphasized yesterday the opposite point of view that the Quebec Government spends very little on the environment in spite of the "waltz of the billions" talked about in press releases.

Most of Quebec's commitments on this subject are made in the form of paying debts assumed by the municipalities, although payments really made last year amounted to only five million dollars in the provincial budget. While Quebec was spending 1 dollar per citizen for water purification, the United States was spending 20 times as much, he declared. It is time for the Government of Quebec to stop "snapping its galluses," as he remarked.

In conclusion, Mr Desjardins emphasized that the cost of cleaning up pollution is a burden that will always be necessary, every day, in order to repair the harm caused by the many polluting activities of the citizens.

CONSERVATION OF WATER URGED IN QUEBEC

Montreal LE DEVOIR in French 17 May 78 p 3

[Text] Quebec. In order to reduce the wasting of potable water during fine weather, about 20 municipalities in Quebec have decided to unite their efforts to those of the Quebec Association of Water Techniques (AQTE), to inform each of their residents, after a scientific analysis of the situation, when and how to water their lawns to keep them in good condition without emptying the municipal reservoirs for that purpose.

A similar experiment was tried 4 years ago at Sainte Foy, a suburb of Quebec. It reduced the volume of sprinkling by one-half as well as the number of consumption points.

This reduction is extremely important because the citizens water about eight times more than is necessary on the average, and an average session of sprinkling (three and one-half hours) consumes four times as much water as an ordinary family uses during a whole day, according to the studies of INRS-EAU [expansion unknown].

While engaged in this project, AQTE does not deny that it hopes thus to make the municipal authorities aware of means to reduce consumption of potable water (filtered and chlorinated at great expense). At present, half of the potable water in Quebec is simply lost through leaks in the systems of mains! It would be more profitable to repair those leaks than to construct new filtration plants at tens of millions of dollars each. This point was stressed by the president of AQTE, Mr Pierre Desjardins.

Concentrating their attention yesterday on the Quebec region, AQTE identified the 10 municipalities of that sector which will participate in the information campaign as well as the six radio stations which will broadcast instructions late in the afternoon (between 1600 and 1730, according to the station).

The advice broadcast in that way will obviously take into account the availability of water in each municipality, but it will also make a daily evaluation of the quantity of water available for watering lawns down to a foot below the surface. This quantity of water will be calculated as a function of

FAILURE TO COMPLETE POLLUTION CONTROL PROJECTS NOTED

Warsaw GLOS PRACY in Polish 16 Jun 78 p 6

[Unattributed article: "Uncompleted Environmental Protection Projects"]

[Text] Each year the state spends more money on capital projects for environmental protection. Unfortunately these allocated funds are not always fully utilized. As we are informed by the Ministry of Administration, Local Economy and Environmental Protection, last year 4,192 million zlotys were utilized of the 4,627 million allocated for building facilities to protect against water pollution. Close to 87% of this amount was spent on improving municipal and industrial sewage treatment, while the rest was allocated for building new facilities.

In 1977 wastewater treatment facilities were put into operation at 75 industrial plants and in 16 municipalities, with a total treatment capacity of 331,000 cubic meters per day. This figure represents barely 55% of plan-specified targets, and only some of these are high-productivity biological treatment plants, ensuring a high degree of neutralization of waste.

One of the main reasons for failure to meet the wastewater treatment facilities construction target was a lack of specializing enterprises as well as adequate output capacity. Of those facilities which were not completed and put into operation, we should mention the wastewater treatment plants at: the Gorzow Chemitex-Stilon Chemical Fiber Plant; the Gdansk Phosphorus Fertilizer Plant; the Piast and Zabrze coal mines; at the Okocim brewery. Needed sewage treatment plants have also been delayed in the following cities: Legnica, Przemysl, Sokolow Podlaski, Opole, and Sosnowiec. At the same time the quantity of sewage requiring treatment is increasing. This increase is 100 million cubic meters above the 1976 figure, while sewage treatment plants currently in operation were able to handle barely 59% of total wastewater.

Local environmental protection services last year evaluated the performance of this country's sewage treatment plants. The analysis, which covered more than 1,400 facilities, indicates that barely 50% of total sewage is properly treated, while the rest is dumped directly into bodies of water. The main reasons for the low degree of efficiency of sewage treatment plants is the fact that these facilities are overloaded, plus frequent breakdowns of pumps,

70 million tons of sediments was substantially overfulled. On the other hand, there were delays in reclamation projects, chiefly in bituminous coal and lignite mining. The target to restore approximately 237 hectares of spoil banks and stripped ground was met by barely 30%.

Delays in capital spending for environmental protection projects give rise to concern. In order to meet this year's target it is necessary first and foremost to catch up on the lag which developed in 1976-1977. The Ministry of Construction and the Building Materials Industry should ensure adequate output capacity for specializing enterprises. At the same time the individual ministries must ensure full utilization of allocated capital funds for environmental protection measures. Unless these projects are carried out, water and air pollution can lead to disruptions in our country's economic development.

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CAPE VERDE

TREE PLANTING CAMPAIGN

Praia VOZ DI POVO in Portuguese 4 Feb 78 p 3

[Text] The implementation of the program "A Tree for Each Soldier" is continuing at the Tarrafal political-military training center, a national news team which visited that institution found.

A number of recruits at the Tarrafal center could in fact be seen watering their trees, after the daily training period. Six hundred trees have already been planted near the military training ground since the beginning of the compulsory service program. The purpose of this campaign is to train each member of the FARP [Popular Revolutionary Armed Forces] to be a dynamizing factor in his native community in the national program for the safeguarding of nature, through the planting of trees and preventing of damage to those already in place.

Moreover, we were able to learn from those in charge of the center that there are no plans for extending this program beyond the symbolic trees, perhaps because of the requirements of the accelerated training to which the recruits are being subjected.

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ZAIRE

FISH POISONED FROM CHEMICALS

Kinshasa ZAIRE in French 15 May 78 pp 12-13

[Article by Mokende Makbondo Maya Bila, "Poisoned Fish in our Cooking Pots!"]

[Text] Wednesday, 3 May 1978, 1300 hours. A group of 10 old fisherman "invades" our offices. Looking very serious, they all want to talk at once, raising their voices now and then, with their wrath at a hair-trigger: "It's not possible, what's happening to us, it's the ruination of our fishing reserves. We have never seen the likes in our lifetime. But this is happening with the complicity of the authorities, since they know exactly what it's about, yet they don't do anything to stop it."

No doubt the determination of the old fishermen to continue the steps they were taking to point a finger of denunciation at the situation served as impulse (to clear their consciences) behind some laconic communiques recently announced over the radio by these very same authorities.

Human Lives in Danger

Chemicals used in fishing have always been a plague the territorial government has battled against. They represent two serious dangers. The first, more direct danger, is the poisoning of the consumers, either in drinking this water or by eating fish caught in these conditions. The second, with more latent effects, but none the less certain for all that, would tend to decimate the species of fish suitable for human consumption, thereby provoking rather soon a scarcity in food products essential to the human organism. In particular the effects of the products utilized go very deep into the waters, sparing neither small fry nor eggs for spawning.

In our memory this is the first time that the fishermen collectively recognize the situation on their own and denounce the use of chemicals in fishing. But let us examine closely the complaint of these old fishermen. What is it all about?

CHEMICAL POLLUTANTS IN NORTH SEA EXAMINED

Frankfurt/Main FRANKFURTER RUNDSCHAU in German 3 Jun 78 p 13

[Article by Lore Asmus: "High Poison Levels in Fish and Sea Birds. New Research in North Sea"]

[Text] With the oil catastrophe on the Brittany Coast in the background, a series of new research results in the past few weeks has given very concrete indications of the causes of many illnesses and deaths among sea birds and fish as a result of high concentrations of harmful chemicals in the North Sea. It apparently can be scientifically established that concentrations of dangerous chemicals work like an insidious poison. It is not just a spectacular oil catastrophe that threatens birds and fish.

Experts Gottfried Vauk of the Helgoland ornithological station and Hans Lohse of the National Chemical Research Installation at Bremen examined in particular the muscle tissue of birds and mammals who had died in the area of Helgoland in the past few months. Especially disturbing was the concentration of the industrial chemical PCB (polychlorinated biphenyls) in an old black-back gull. Over 0.3 percent of the chemical was found in the animal's muscle tissue. It has "accumulated" in the animal over the years and surpassed the permissible tolerance level to a degree not thought possible until now.

Although the poisonous pesticide DDT for all practical purposes may no longer be used in Northern Europe at least, the permissible tolerance levels were surpassed by twice as much not only in starlings, spotted woodpeckers and red phalaropes, but also in housecats and mice. The concentration in sea birds lay 10 to 100 times over the upper limit. This was true above all for three-toed gulls and even more for kingfishers.

The scientists were also struck by these results. They are now certain that those birds who live at the end of the food chain, therefore especially those who feed on fish, are most in danger from DDT, chlorinated carbohydrates or PCB. Even when traces of these harmful chemicals in free form are extremely small, they can however accumulate in algae, small crustaceans and mussels. Fish which eat these receive a still larger concentration of dangerous

INTERNATIONAL AFFAIRS

BALTIC POLLUTION THREATENS SEAL SURVIVAL AS EMBRYOS DIE

Helsinki HELSINGIN SANOMAT in Finnish 23 May 78 pp 3, 9

[Article: "Baltic Pollution Killing Off Majority of Seal Embryos"]

[Text] The Soderskari Research Station is offering positions to experienced seal hunters during the spring ice. They will participate in the collection of specimens and in making seal observations. In the summer the station operates as a support point for the task of counting seals in all of the Gulf of Finland.

The University of Oulu continues to do research on poisonous substances in the northern part of the Gulf of Bothnia.

They have found less poisonous substances from the seals in the northern part of the Gulf of Bothnia than in the southern part. Yet, for example, two-thirds of the marble seals of sexual maturity do not give birth. Of the female seals more than half experience interrupted embryo development.

A portion does not even become pregnant since their fertility has become complicated by some factor or they have become totally sterile.

PCB and DDT disturb the metabolism of sex hormones and reduce their overall resistance.

Toxic substances in the water are the only threat to seals since their offspring are never slaughtered as are those of the gray seal. The offspring of marble seals are very difficult to find since the seal gives birth in snow banks and not on the open ice as gray seals do.

"The adult marble seals have not even been placed under the protection of law since they are able to survive the small amount of hunting," states Olavi Stenman.

There are still tens of thousands of marble seals in the Gulf of Bothnia. An exact figure is not known, but the estimates range from 10,000 to 50,000.

CREATION OF ATLANTIC-IBERIAN-AFRICAN UNPOLLUTED ZONE DISCUSSED

Lisbon DIARIO DE NOTICIAS in Portuguese 6 Jun 78 p 2

[Text] "The sea cannot continue to be a vast refuse container for lethal waste from our civilization. The false notion that its immensity makes it invulnerable to the increasing assault by pollutants can no longer deceive us. If we do not protect life in the sea, we shall be jeopardizing life on earth." The foregoing statement was made yesterday by the deputy prime minister, Almeida Santos, at the opening session of the conference for the creation of the Atlantic-Iberian-African Region, the work of which will continue until tomorrow afternoon. Its participants include delegations from Spain, Morocco, Mauritania, Senegal and Guinea-Bissau, as well as our country.

The sphere of influence of the proposed Atlantic-Iberian-African Region is geographically demarcated to the north by the parallel which crosses Nazare, on the Portuguese coast; to the south by the Cacine River, in Guinea-Bissau; to the west by the meridian which crosses Flores Island, in the Azores archipelago; and to the east by the coasts of Portugal, Spain, Morocco, Mauritania, Senegal and Guinea-Bissau. The aforementioned region therefore includes the Azores archipelago in the northwest, the Madeira and Canaries archipelagos in the central section and Cape Verde in the southwestern section.

In discussing these geographical boundaries, Frigate Capt Jose Cabido de Ataide, chairman of the Portuguese delegation which organized the conference, stressed the fact that "the geographical position of these archipelagos enables us to have oceanographic observation stations on the high seas which are especially suited for providing proper support for research over such a large maritime area. Thus, we have the advantage of being able to plan oceanographic studies of considerable scope, using only small-sized vessels."

Reasons for the Creation of the New Maritime Region

Commenting on the reasons which led to the plan for the creation of the new international maritime region currently being discussed in Lisbon, the head of the Portuguese delegation alluded to "the problems which we must face now, resulting from the increase in our countries' jurisdiction over the sea, with the creation of the Exclusive Economic Zone and the appearance of real phenomena of maritime pollution, which we are obliged to deal with, because if we do not, and now, we shall run the risk of creating irreversible situations that could prove detrimental to us."

the regularity of its climate is sufficient to assure that a study of it will afford conclusions marked by a satisfactory degree of accuracy. Enough about it is already known to show that it could represent an essential contribution to the economic development of the countries represented here."

Almeida Santos also observed: "The study of it does not start from scratch. There are already laboratories operating on Santa Maria Island, in the Azores archipelago, on Madeira Island and in Tenerife, in the Canaries archipelago. Identical research facilities could be set up on Sal Island, in the Cape Verde archipelago. The work that has been done and that to be accomplished in the future with cooperation will make it possible for us to reach a point soon, without a setback, at which we can be assured not only of our expectations, but also of the effort and the technical and financial assistance of the specialized international organizations with which we are affiliated."

In attendance at the opening session for the work of this conference, which is taking place on the premises of the Gulbenkian Foundation, were the secretary of state for fisheries, Vasco Neves, and the deputy chief of staff of the Navy, Vice-Admiral Silva Horta.

2909

CSO: 5000

receive the untreated sewage of a population of nearly 2 million in Lisbon's urban areas to the north, and Barreiro-Montijo to the south; the waste from a major industrial zone; and also the drainage, rich in fertilizers and biocides, from an intensive agricultural activity located in the upper region of the estuary. In addition to this burden of sewage and waste, the estuary is subjected to the pollution resulting from the fumes from industrial activity and automobile traffic being released into the atmosphere.

Despite this constant, violent assault, the Tagus estuary has remained alive thanks to the flow of water entering and leaving with the tides, as a result of which pollutants are forced into the sea. However, its capacity for self-cleansing is reaching its limit and, if it is reached, extremely serious consequences will ensue.

To ascertain what is going on in the Tagus estuary does not necessarily require a stringent laboratory analysis of its waters. Its image has been changing gradually, and many residents of Lisbon and the southern shore can now hardly remember the presence of the dolphins, which were an attraction for boating. The cultivation of oysters has also almost completely disappeared, a major economic activity which, a few years ago, could be observed in the Alcochete area. The oyster beds, which in the past numbered in the thousands, have been "poisoned," and Lisbon has stopped marketing a product the exporting of which represented a sizable source of foreign exchange. As early as 1972, only eight of those beds were active, and their output was no more than 7 percent of that recorded at the beginning of the 1960's.

Moreover, there is fear of a gradual decline in the number of birds which usually use the estuary as a haven. The "curved beak avocet," commonly known as the "alfaiate" [a long-legged shorebird] still chooses the Tagus as its winter "habitat;" and throughout the year one can also observe very heavy concentrations of other species of birds, such as the royal duck and the white heron, as well as the fox.

The Quality of the River's Water Is Constantly Deteriorating

From its beginnings in Portugal, the Tagus River has been one of the most important factors in the country's economic situation, especially in the regions which it crosses. An abundant source of fresh water and energy, and a fertilizer of the soil, the quality of its water is becoming constantly deteriorated. The development of the urban complexes located along its banks which empty their untreated sewage into it, the development of an industrial network which has found sufficient resources in it for its activity and the increasing use of fertilizers and biocides in agriculture are among the main causes for this deterioration. When it reaches Muge, the river opens up into a broad estuary, and its features and appearance change. There are generally considered to be two separate zones (north and south), with an irregular bottom and depths reaching up to 40 meters. There is evidence which warrants the conclusion that the estuary serves as the site for

The Emptying of Sewage Into the Estuary Threatens the Costa do Sol Beaches

The pressing need for a management program may become more evident when, analyzing the importance of the Costa do Sol beaches from an economic and social standpoint, one assesses the consequences resulting from the complete deterioration of their waters. An economic study made in 1976 indicates that the declining volume noted in 1973 in the number of guests using the Costa do Sol's hotel units and the reduction in passenger transportation on the Estoril Line during the summer of 1974 may be associated with the pollution of the water on those beaches.

Traditionally known as Costa do Sol, this area, wherein there has also been major housing development, includes the municipalities of Cascais and Oeiras, and its beaches are visited, mainly during the summer months, either by foreigners (in view of the tourist infrastructure that exists there) or natives, owing to the easy access afforded by the railroad line which is 26 kilometers long and connects Lisbon with Cascais.

Of the 47 hotel units existing there in 1974, 41 were situated in Cascais and the rest in the municipality of Oeiras. The combination of these establishments, the vast majority of which were built prior to 1968, represented investments amounting to nearly 750,000 contos in 1974.

However, the tourist investments reached a far higher figure; because in 1974 there were on Costa do Sol 95 restaurants (five luxury class, 27 first class, 35 second class, 16 third class and 12 without any special classification); six movie theaters, 13 nightclubs, four music halls, 13 "dance" bars, three tennis courts, three horseback riding fields, a car-racing track, a golf course, a miniature gold course and a casino.

Between 1964 and 1974, the annual accumulated income from revenue and spending related to tourism on Costa do Sol was 48.420 million contos, and the figure for 1974 was about 6.9 million contos. The total number of guests in the two municipalities reached its highest absolute figure in 1973 (when there were 180,291), representing 5.4 percent of the total number of guests on the continent. The authors of the aforementioned study made the following comment in this connection: "It would appear that we are confronted with an entire tourist infrastructure, with very heavy investments, which there is an urgent need to preserve, inasmuch as it could be seriously affected by the pollution of the Tagus estuary."

Hence, for the purpose of ascertaining the sanitary conditions on these beaches, in 1975 a study was promoted the results of which confirmed that there was reason to be concerned about the quality of the water originating in the emptying of sewage into the estuary, either directly or through the small streams of water which seep into the region, such as the Tranco and Jamor Rivers, and the Laje and Barcarena Brooks. These rivers and brooks are subject to the pollution stemming from the emptying of urban sewage and the waste from several industrial units. Some of them have a deplorable appearance,

chemicals and food, and slaughterhouses), in Seixal (metal, textile and chemical plants) and Montijo (ceramic, food, forest products and petroleum by-products factories and slaughterhouses).

The Sources of Pollution Identified and the Tagus Natural Reservation Created

The possibility for the estuary to continue to represent a natural resource of immense significance to the nation, which it still is, demands the adoption of measures which, on the one hand, must be compatible with the present economic situation and, on the other, must insure that the results of their use will be compatible with the conservation of the area, and must guarantee protection for the health of the population located around it. Hence, there is in progress a study plan aimed at promoting a group of activities of a scientific and technical nature, the results of which will make it possible to devise proposals for the rational management of the estuary. This concern is, moreover, was what was behind the spirit of the technicians who, in 1940, proceeded to reexamine the sewage from the city of Lisbon.

The first systematic assessment was made in 1941, and its purpose was to collect information with which to determine the degree of purification to which the residual water in Lisbon should be subjected. The results of this study, ordered by the Municipality of Lisbon, indicated that the estuary could still assimilate the existing load without treatment.

After a similar project had been carried out in 1952 and 1953, the National Board of Scientific and Technical Research promoted a study aimed at establishing a pilot purification station for the waters of the Tagus, and the results suggested indications of a high rate of pollution. In 1971 also, studies were begun on a regular basis, under the auspices of the National Laboratory of Nuclear Physics and Engineering to control the radioactive contamination of the estuary caused by the discharge of liquid effluvia. Up until that time, no problems were yet detected in this area.

Other studies were made during recent years in order to check of the quality of the water at various points on the estuary, specifically near the beaches at Costa do Sol and Estoril. Mention should be made of the construction of a physical model of the estuary of large dimensions, on a horizontal scale of 1 to 500, and a vertical scale of 1 to 70, resulting from a joint effort by the General Administration of the Port of Lisbon, the General Directorate of Hydraulic Services and the National Civil Engineering Laboratory.

The current plan to study the estuary, the initiation of which was decided upon in 1975, under the auspices of a group of entities with direct interests in that natural resource, is aimed at "a coherent management of the estuary which will make it possible to protect the health of the area's population and to preserve to the maximum degree the potential for its use."

The concrete goals of the work program that has been adopted, in addition to the study of the quality of the water and the identification and classification

PORTUGAL

ARTICLE RAISES QUESTIONS OF POLLUTION FROM SPANISH REACTORS

Lisbon EXPRESSO in Portuguese 17 Jun 78 p 4

[Text] According to disclosures made to EXPRESSO by reliable sources, the first electronuclear plant of the Spanish powerplant at Almaraz has now entered the testing phase. However, Portuguese technicians have not participated in these tests in the capacity of observers, despite the fact that the powerplant has been built next to the Tagus River, just a few dozen kilometers from our borders. Furthermore, the departments responsible for nuclear energy in Portugal have not exercised any control over the waste given off by Almaraz.

As we reported, a few months ago the two 900 megawatt electric plants of this Spanish nuclear powerplant were in the final phase. Meanwhile, one of the plants has now been completed, and it is planned for the second one to go into operation by the end of this year.

During the planning phase for the two Spanish nuclear powerplants adjoining the Portuguese border, and owing to the fact that both would be emptying their waste into the Tagus River and the Douro River (the Sagayo powerplant), the Portuguese Nuclear Energy Board requested of its counterpart in the neighboring country access to the documentation concerning the security of the facilities. This request from Portuguese technicians, under the terms of the agreements on cooperation, was quite simply (and diplomatically) denied, and the Spanish Nuclear Energy Board claimed that it would be improper to turn these studies over to Portugal, because they involved calculations made by foreign private entities (Westinghouse), and not material prepared by the Spanish Nuclear Energy Board.

However, the country which will be most affected by the waste will be Portugal, rather than Spain, particularly in the case of Sayago, where the planned powerplant is 12 kilometers from Miranda do Douro as the crow flies. This being the case, the least we might have expected of our government is the assumption of a firmer position. In fact, an electronuclear facility is not exactly the same as a hotel unit, even though there are some who would like us to believe that. But the Portuguese Government cannot admit the existence of real danger in the nuclear field, inasmuch as its program is quite clearly an option for the nuclear alternative. However, it should be noted that the responsibility for this cannot be attributed solely to the government of Mario Soares, because

terrorism. This type of activity could assume the form of diversion of fissionable material, with which an atomic power with slight power could be built (it should be noted that considerable quantities of enriched uranium have disappeared, both from factories and military arsenals), or it could manifest itself in an attack inside the reactor (for example, with incendiary bombs, which would not be unprecedented), or even in the removal and emptying of fission products into water or on land, with the resultant contamination.

Several months ago, the ETA [Basque Fatherland and Liberty Group] attempted to attack a nuclear powerplant in the northern part of Spain.

2909

CSO: 5000

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